2017 International Conference on Industrial Engineering, Applications and Manufacturing, ICIEAM 2017 - Proceedings, 2017

Organization of data exchange through the modbus network between the SIMATIC S7 PLC and field devices

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Abstract

© 2017 IEEE. The method is suggested to establish master-slave communication between the Siemens PLC and field devices based on the Modbus protocol for process control systems. The data exchange between the PLC and current node in the network is organized by using the session data blocks. Creating the request package and unpacking the response from the slave device are carried out by the two respective functions made with the SCL language help in the Step 7 system. At the implementation of this method, the storing of the network and nodes characteristics as well as the data obtained from the network are implemented in additional data blocks of the network level which are the shared memory for the entire control system. This ensures their availability for both the PLC software and the visualization software. The using of the shared memory provides an ability to design a PLC program for data exchange through a network and for process control carried independently of each other which considerably simplifies the development of the process control system software.

http://dx.doi.org/10.1109/ICIEAM.2017.8076369

Keywords

automated control system, field device, Modbus protocol, network communication, programmable logic controller

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